

VCE VET Engineering Studies

Sample Questions

Written Examination – End of Year

These sample questions are intended to demonstrate how new aspects of VCE VET Engineering Studies may be examined. They do **not** constitute a full examination paper.

- All dimensions are in millimetres (mm) except where specified.
- Unless otherwise indicated, the diagrams in this book are **not** drawn to scale.

Question 1 (3 marks)

Calculate the included angle 'X' for the machine shaft shown in Figure 1.

Show your working out to one decimal place.

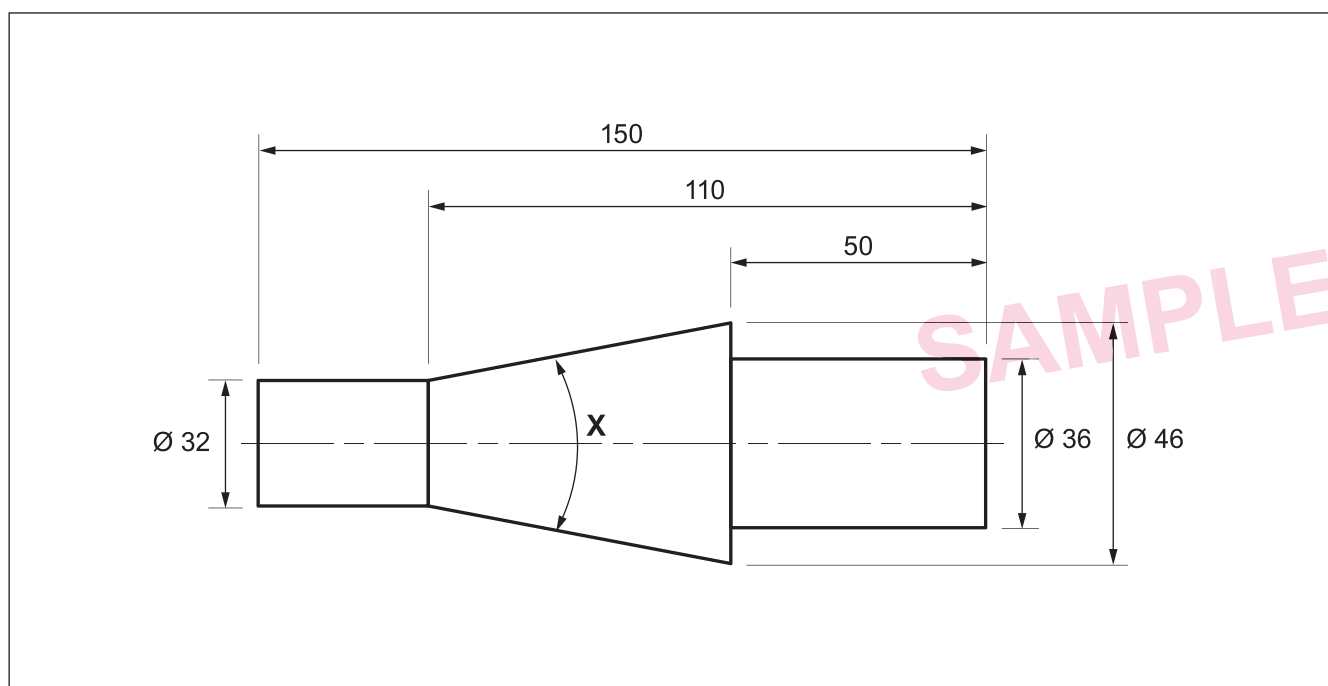


Figure 1

Question 2 (4 marks)

A box contains nine pieces of metal rod of varying sizes, measured in inches, as shown in Figure 2.

Calculate the total length of the metal rods in inches. Show your working out.

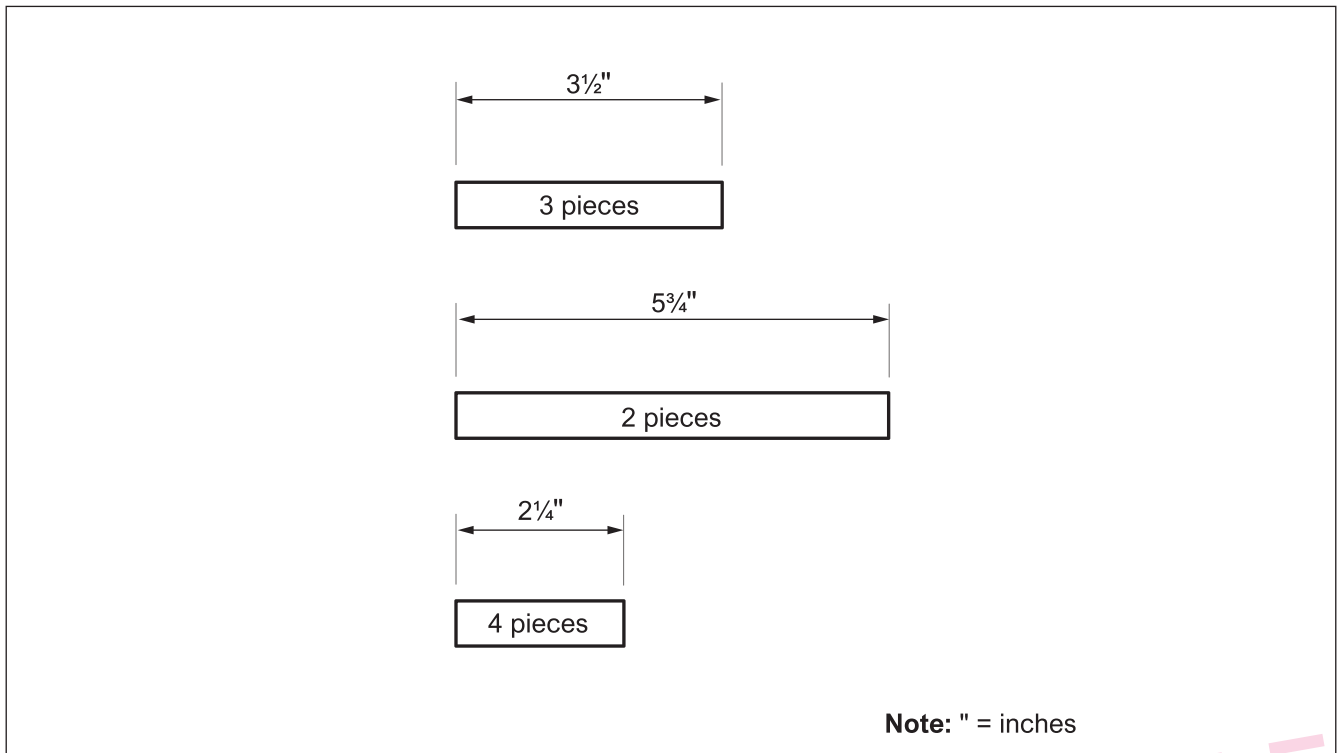


Figure 2

SAMPLE

Question 3 (3 marks)

Figure 3 shows a piece of sheet metal. Sizes shown are in metres (m).

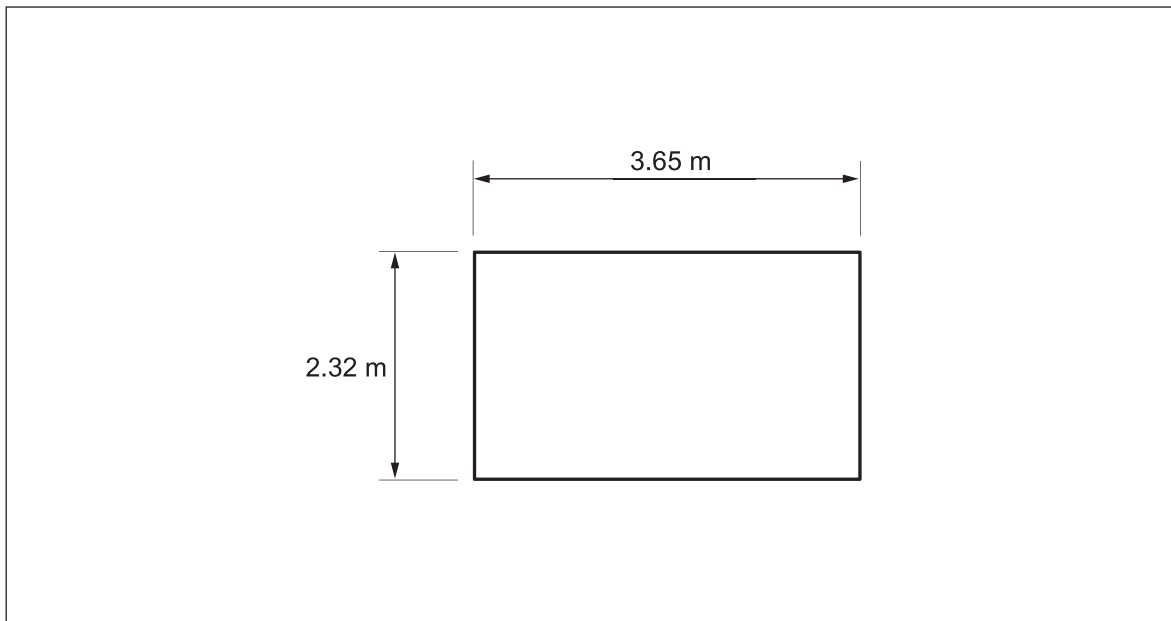


Figure 3

- a. Calculate the area of the sheet metal shown in Figure 3 in square metres (m^2) to two decimal places.

1 mark

- b. Calculate the perimeter of the sheet metal shown in Figure 3 in millimetres (mm).

2 marks

Question 4 (2 marks)

A six-metre length of square tube has had eight pieces cut off as follows:

5 × 430 mm long

3 × 1150 mm long

The remainder of the square tube is recycled as waste.

Calculate the percentage (%) of the six-metre length of square tube that becomes waste. Show your working out to one decimal place.

SAMPLE

Question 5 (3 marks)

Figure 4 shows a chart of the total sales of fasteners in a hardware store in 2024.

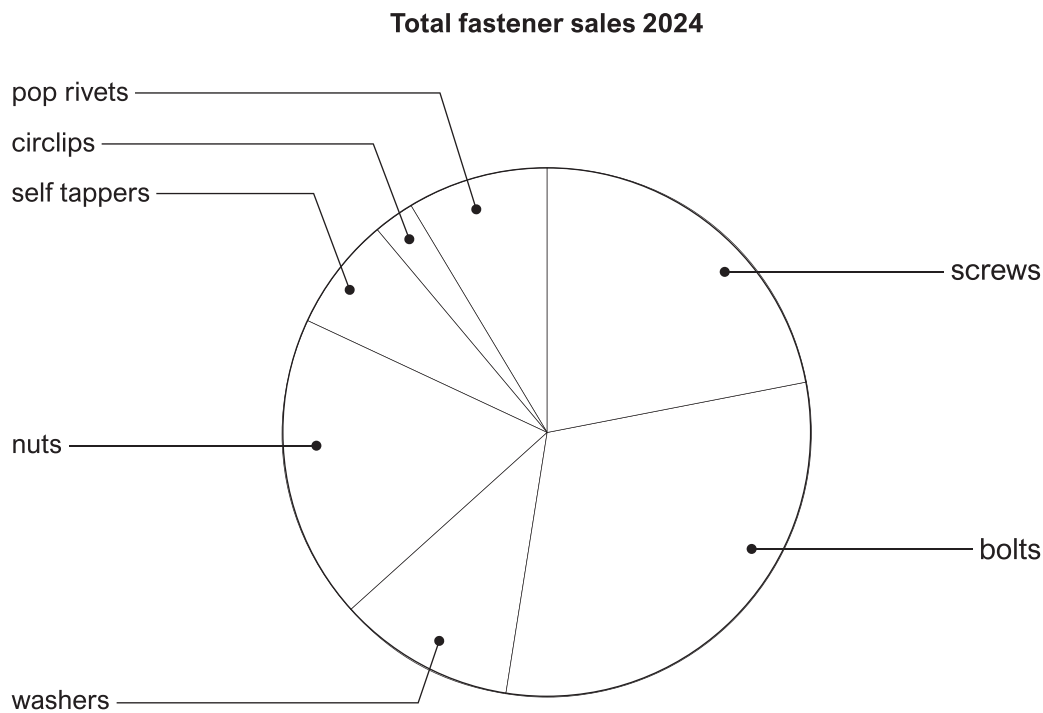


Figure 4

- a. State the common name for this type of chart.

1 mark

- b. Describe the main advantage of displaying data in this type of chart rather than as numbers in a table.

1 mark

- c. Identify the fastener that had the least sales in 2024.

1 mark

SAMPLE

Question 6 (5 marks)

Figure 5 is a bar chart showing recycled scrap material weight in kilograms (kg) from a manufacturing company over a six-month period.

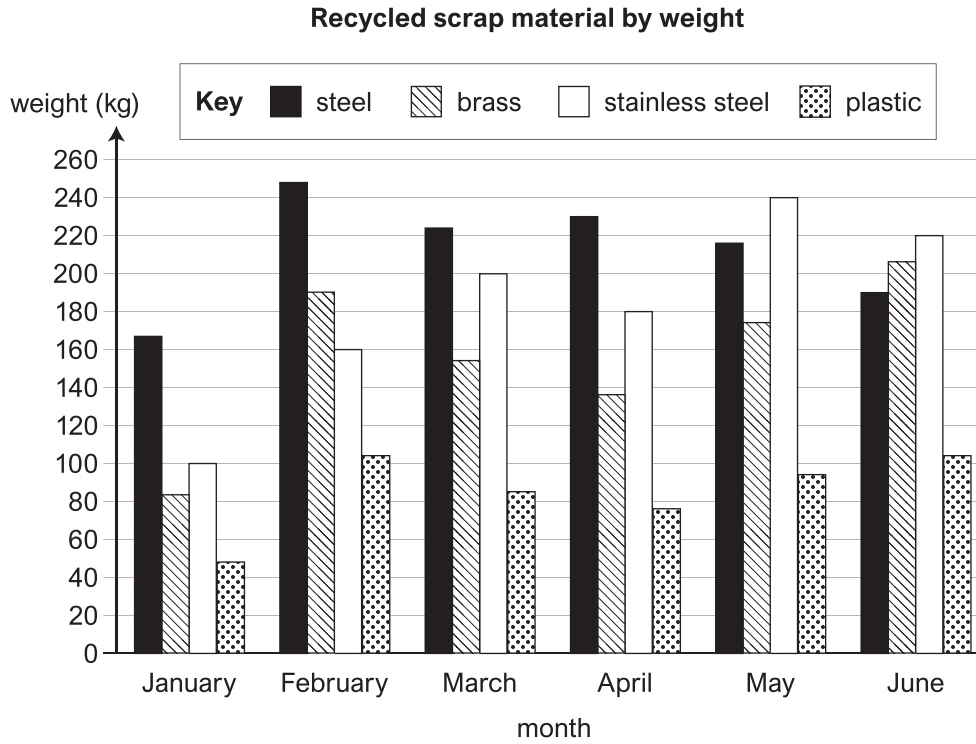


Figure 5

SAMPLE

- a. State which month had the highest amount of brass scrap recycled. 1 mark

- b. Calculate the total amount of stainless steel scrap recycled for the six-month period. Show your working out. 2 marks

- c. Identify the materials that had the **most** and the **least** amount of scrap recycled over the six-month period. 2 marks

Most _____

Least _____

Question 7 (6 marks)

Figure 6 shows a line graph depicting the number of rejected products from a production line, each day of week 28 (a one-week period).

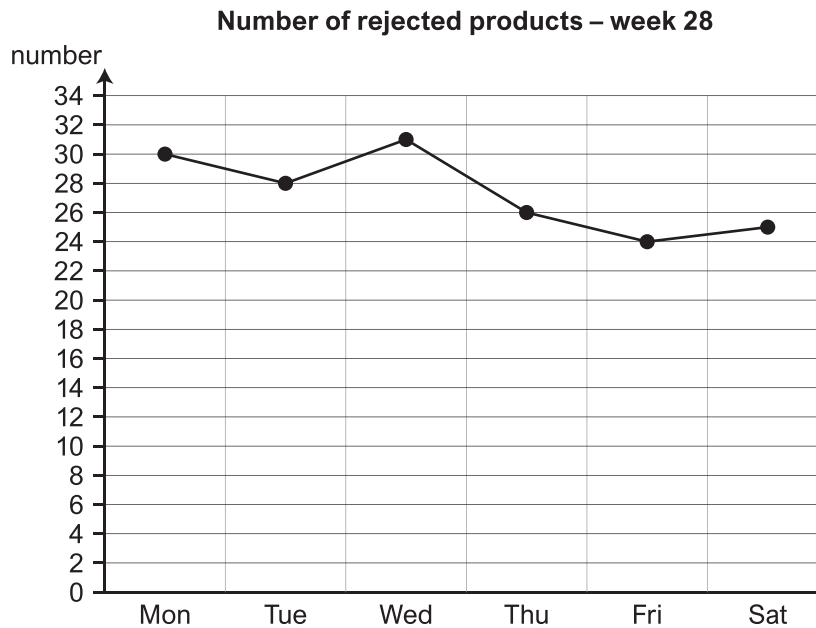


Figure 6

- a. State the lowest number of daily rejects for the week. 1 mark
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- b. State the highest number of daily rejects. 1 mark
-
- c. Calculate the difference in reject numbers from Wednesday to Thursday. 1 mark
-
- d. Calculate the total amount of rejects for the week. Show your working out. 2 marks
-
-
- e. Describe the trend in rejects over the week. 1 mark
-

Question 8 (5 marks)

Figure 7 shows a chart of manufactured tools that were rejected over a six-month period.

Tool	Jul	Aug	Sep	Oct	Nov	Dec
Drills	451	540	378	395	502	384
Taps	204	186	195	177	164	130
Blades	64	60	68	72	76	84
Reamers	88	76	59	75	65	70

Figure 7

Figure 8 shows a blank grid on which to draw a bar chart for the blade rejects.

- a. Complete the bar chart in Figure 8 showing the blade rejects for the six months.

Your chart must include:

- x-axis labels
- y-axis quantities
- chart title.

4 marks

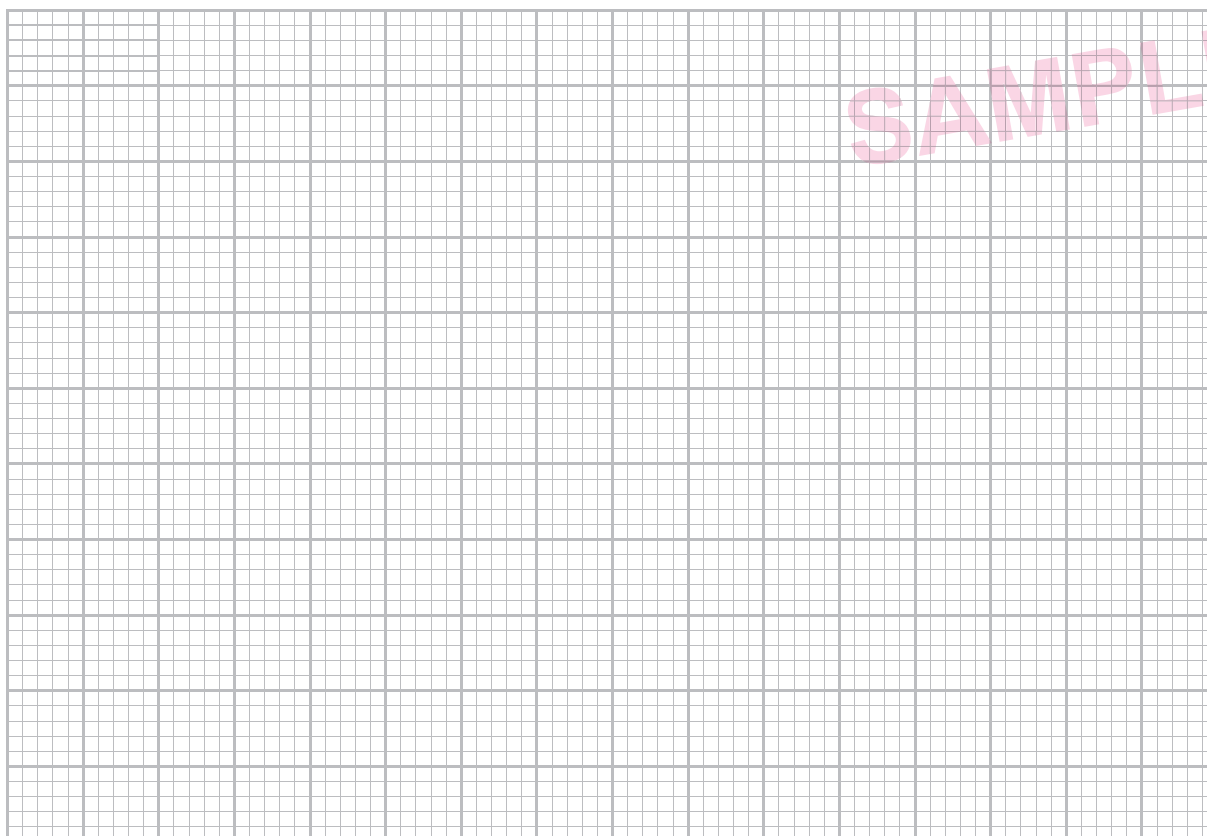


Figure 8

- b. Describe the trend in blade rejects for the six-month period.

1 mark

Question 9 (3 marks)

20 shafts have been machined over one day. Figure 9 shows a plot of the measured diameter of each shaft numbered 1 to 20.

The required size of each shaft is $\varnothing 16 \pm 0.02$

- a. Draw in and label two lines representing the Upper Control Limit and the Lower Control Limit. 2 marks

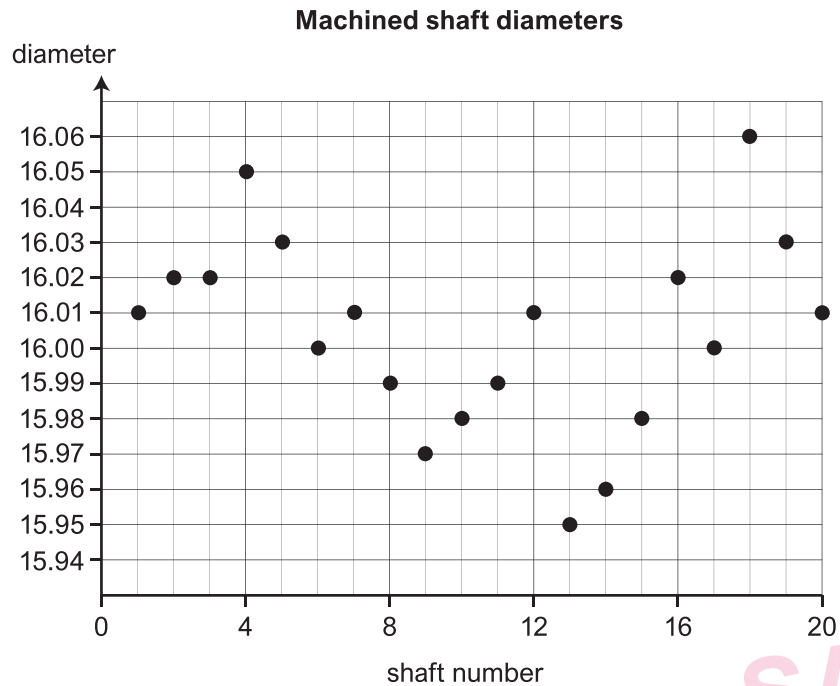


Figure 9

- b. How many shafts are out of tolerance? 1 mark
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Question 10 (5 marks)

Figure 10 shows a double line graph of inflow (collected rainwater) and outflow (used water) in litres for storage tanks over a one-year period.

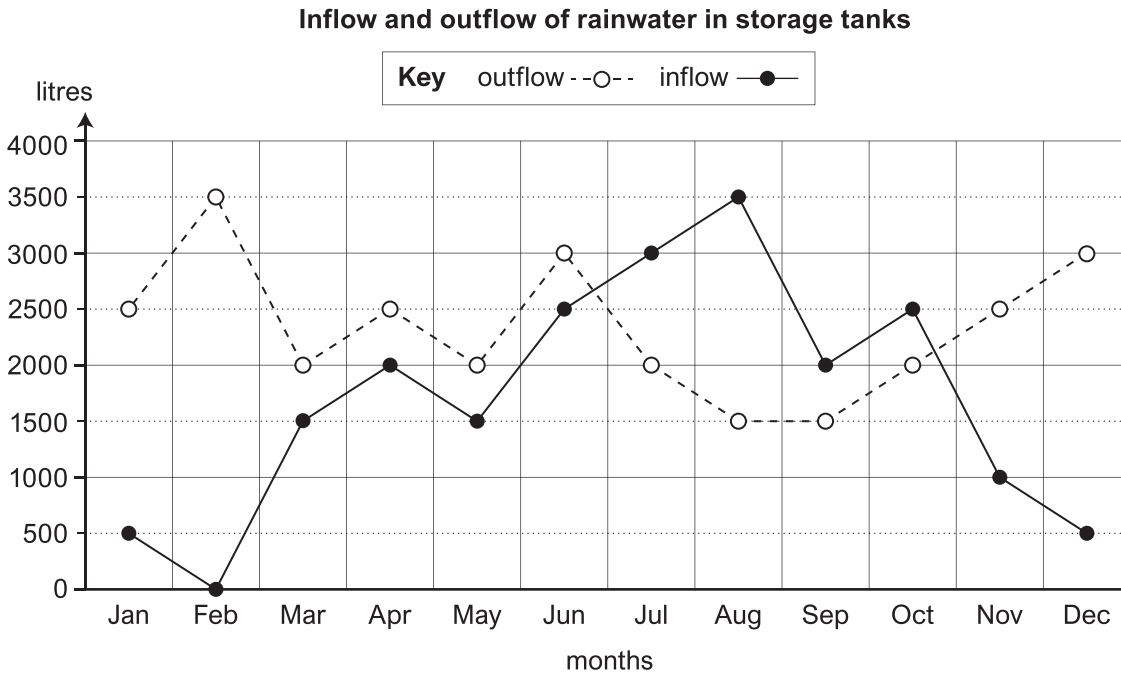


Figure 10

- a. Identify the month that had the highest inflow. 1 mark

- b. Identify all the months in which inflow exceeds outflow. 1 mark

- c. Calculate the difference between inflow and outflow in litres for August. 1 mark

- d. Calculate the average monthly usage (outflow) for the first six months of the year. Show your working out. 2 marks
